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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/761,576	01/21/2004	Matthias Schaller	2000.109800	3461

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EXAMINER	
DEO, DUY VU NGUYEN	
ART UNIT	**PAPER NUMBER**
1765	

DATE MAILED: 02/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/761,576	SCHALLER ET AL.	
	Examiner	Art Unit	
	DuyVu n. Deo	1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) *33 and 34* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,7-11,13-21 and 23-32* is/are rejected.

7)☒ Claim(s) *6,12 and 22* is/are objected to.

8)☒ Claim(s) *33 and 34* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *8/6/04, 2/25/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-5, 7-11, 13-21, 23-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson et al. (US 3,808,068).

Johnson describes an etching method comprising: forming a specific layer 11 on the substrate, ion implanting the specific layer 11 to create a region of damage 14 that has a different rate than the non-implanting region, and etching the specific layer using a specified etch recipe (col. 2, line 55-col. 3, line 41). Unlike claimed invention, Johnson doesn't describe etching this layer two separately with and without ion implantation to determine the different etch rate between the layer with the ion implantation and without the ion implantation. However, Johnson teaches that the etch rate is a function of type of impurity and the dose employed for the ion implantation to achieve different etch rates between the implanting and non-implanting region (col. 3, line 18-40). It would have been obvious to one skilled in the art, before the actual process of etching this layer on a subsequent substrate, to etch the layer without the ion implanting and with the ion implanting through routine experimentation in order to adjusting the type of impurity and dose employed to provide processing parameters of the ion implanting and the etch rates for the actual process.

Referring to claims 25, 29-31, performing etching on a plurality of the layer, adjusting the processing parameters, and measuring the etch rates across the substrate would be obvious because that's how one skilled in the art would determine the optimum processing parameters.

Referring to claims 1, 9, 13, 20, 32 using the across-substrate variations in etch rates or local rates as a feed back to adjusting the ion implantation step would be obvious and must be used because the ion implantation step is used to create etch rate differences (col. 3, line 18-40).

Referring to claims 3, 4, 26, 27 the etch rates is either determined as the etching process is being performed or after it has been completed would be obvious. It would have to be done either way to provide the etch rates for the experimental process.

Referring to claims 5, 16, 21 since the ion implantation is used to provide different etch rates under a specified etch recipe, it is obvious that changing the ion implantation parameters would changing the etch rates. Therefore, one skilled in the art would have to know and establish a relationship between the ion implantation parameters, etch rate, and the etch recipe.

Referring to claims 7, 18, 23 figs 1B and 3B show the ions are within the layer; therefore, the implantation energy must be selected so that its peak concentration of implanted ions is within the layer's thickness.

Referring to claims 8, 19, 24, the type of ions selected would have to the diffusitivity that is less than a predefined threshold at temperatures of subsequent steps because it controls the lateral and depth dimensions of the desired grooves (col. 3, line 8-11). Otherwise, the ions would diffuse and create different dimensions for the grooves.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 8, 19, and 24 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is unclear by the limitation, "the type of ions selected would have to the diffusitivity that is less than a predefined threshold at temperatures of subsequent manufacturing processes". The specification doesn't describe what this predefined threshold is and how the diffusitivity of the implanted ions is or behaves at or relates to temperatures of subsequent manufacturing processes. At this time, it is understood as the diffusitivity would be stable at temperatures of subsequent manufacturing processes.

Allowable Subject Matter

5. Claims 6, 12, 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 6 and 22 are allowable because applied prior art doesn't suggest an implantation dose is varied so as to substantially compensate for across-substrate or local etch rate non-uniformities on the basis of said relationship (between the at least one implantation parameter, etch rate for the process layer, and specified etch recipe). Johnson concerns about using the ion implantation to create damage region, which can be selectivity removed to create grooves on the process layer.

Claim 12 is allowable because applied prior art doesn't suggest or teach at least one parameter of the ion implant process is determined to compensate for across-substrate variations

in etch rates. Johnson uses the ion implant to create variations in etch rates, but not compensate for the variations in etch rates, across the substrate to create damage regions that can be selectivity removed to create grooves on the process layer.

Information Disclosure Statement

6. The information disclosure statement filed 8/6/04 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

Election/Restrictions

7. Applicant's election of method claims with traverse in the reply filed on 1/17/06 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DuyVu n. Deo whose telephone number is 571-272-1462. The examiner can normally be reached on 6:00-2:30 Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571-272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Primary Examiner
Duy-Vu N. Deo
2/14/06